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Description of the funded research project

1st Call for H.F.R.I. Research Projects to Support Faculty Members & Researchers and Procure High-Value Research Equipment

Title of the research project:Consequences on biodiversity from the abandonment of traditional land uses in mountainous areas: state of the art, predictions for the future, response measures

Principal Investigator: Ioannis Tsiripidis

Reader-friendly title: Does countryside abandonment by man favor or harm biodiversity?

Scientific Area: Environment & Energy

Institution and Country: Aristotle University of Thessaloniki, Greece

Host Institution: Aristotle University of Thessaloniki, Greece

Collaborating Institutions: Hellenic Agricultural Organization – Demeter (HAO); International Hellenic University

Budget: 164.000 €

Duration: 36 months

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Research Project Synopsis

Land use abandonment (LUA), especially on mountainous or low productivity areas, is a phenomenon that takes place worldwide and it constitutes the most predominant land use change in Europe.

Up today, there are contradictory results concerning the impacts of LUA on biodiversity and thus different inputs for the development of policies to deal with this issue. According to some publications, LUA is considered as a unique chance “for restoring some of the lost biodiversity and ecosystem functions” in Europe, through a process called rewilding. On the other hand, there are other studies, which conclude that land use abandonment has negative impacts on biodiversity and ecosystem functions or even comprise one of the most important biodiversity threats for specific species and habitats.

The main aim of the project is to study the consequences of land use abandonment on the three main facets of vascular plant diversity (taxonomic, functional and phylogenetic) in mountainous areas, to predict the three facets of diversity in the future under land use and climate change scenarios, and to build plans that will contribute to the effective conservation of the different diversity facets, based on both present and future (predicted) conditions.

Changes of biodiversity characteristics because of land use abandonment are taking place right now in Greece and Europe and this phenomenon will not take longer than few decades to be completed. Thus, right now is the time to study this phenomenon and act through conservation measures and policies in order to ensure the best possible perspectives for biodiversity conservation and human use of natural resources.

Project originality

The project aims at applying a holistic and novel approach for the study of the consequences of LUA in plant diversity. It aims at the combination of different methods and different types of data to explore in depth the abovementioned consequences. The research questions focus on the impact of LUA on biodiversity, a research topic for which the scientific community shows an increasing interest. Furthermore, many of the methods that will be used to address the research questions are modern and their synergetic use is still not adequately explored.

LULC change is a subject that progressively started to be studied intensively from the beginning of 21st century, and the rate of related publications is still rapidly increasing. Land use and climate change are among the major threats of biodiversity, thus the prediction of their combined effect on biodiversity comprise a major challenge in conservation biology, but up to now has been rarely addressed.

Integration of all diversity facets in the context of biodiversity understanding and conservation planning is crucial since each component is possible to be related with distinctive utilities, such as option value, resilience or maximising ecosystem functioning.

Systematic conservation planning of biodiversity will take into account the changing environmental conditions for the future, which is consider as a crucial issue towards the ensuring of the effectiveness of conservation measures and policy.

Expected results & Research Project Impact

The research project can contribute to the scientific field it belongs through the following ways: a) answering of questions concerning an applied ecology topic that is investigated intensively during the last years and thus comprising a “hot” research topic, b) the development of a comprehensive set of empirical data that can be used for other research questions in ecology beyond those addressed in the project (empirical datasets have been proven valuable in testing and generating scientific hypotheses), c) the suggestion of a suite of modern methods and approaches that follow the up to date scientific knowledge, which can address the research questions of this project but also other relevant issues concerning ecology and conservation, d) the testing of important ecological theories, such as the Intermediate Disturbance Hypothesis and the Intermediate Productivity Hypothesis on the basis of a comprehensive empirical dataset, and e) the simultaneous consideration of the two most important biodiversity threats (land use change and climate change) in conservation planning, which is a modern and very important approach in conservation.

Economic and social impacts are also indirectly related with the project, since LUA is a socio-economic phenomenon, and an appropriate socio-economic policy must be pursued to solve this problem. Concluding on the effects of the different traditional land uses on biodiversity may assist towards the development of appropriate policies, targeting both the economic sustainable development of countryside and biodiversity conservation.

The importance of this funding

Funding of this project is important for the research activities of the people involved in its implementation, because it offers:
The chance to deal more intensively with a research question, which members of the research team study the last years.
The ability to implement a holistic approach in the study by combining skills and expertise of different researchers, concerning several methods and research approaches.
The means to develop empirical datasets that can be elaborated in the future for studying relevant research questions and will be used to test certain methodological approaches and scientific hypotheses.
The sources and the ability for young and senior researchers to collaborate and achieve research targets of high quality.
The opportunity to contribute to finding optimal solutions for important and applied research problems that are directly related to biodiversity conservation and recent socio-economic trends, concerning human use of environmental resources.

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